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IS 7395 (1989): Gum Ghatti [PCD 12: Plastics]



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“Knowledge is such a treasure which cannot be stolen”

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Indian Standard

GUM GHATTI — SPECIFICATION

(First Revision)

भारतीय मानक

घट्टी गोंद — विशिष्ट

(प्रथम पुनरीक्षण)

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BUREAU OF INDIAN STANDARDS

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FOREWORD

This Indian Standard (First Revision) was adopted by the Bureau of Indian Standards on 6 November 1989, after the draft finalized by the Adhesives Sectional Committee had been approved by the Petroleum, Coal and Related Products Division Council.

This standard was first published in 1974 and covered separately the essential and the optional requirements. Subsequently it was felt that all the requirements prescribed as optional, for example, volatile matter, total ash, acid insoluble ash and viscosity are important characteristics and may be included as the mandatory requirements, therefore, in this revision, a single set of requirements has been stipulated.

In this revision, requirement for viscosity has been modified and test method for determination of viscosity by Brookfield viscometer has been included under Annex A.

Gum Ghatti (Indian gum) is a complex polysaccharide composed of *l*-arabinose, *d*-galactose, *d*-mannose, and *d*-glucuronic acid residues whose exact molecular structure and mass are undetermined. The gum has been used extensively in recent years both in the petroleum industry as a drilling mud conditioner and in the explosive industry as a preferential water absorbent or desiccant. It is used as an emulsifier, stabilizer, and thickener in ceramics, foods and pharmaceuticals.

Ghatti is an amorphous, translucent, water soluble gum exuded by the tree *Anogeissus latifolia* of the family combretaceae. The tree is quite large and can be found abundantly in the dry, deciduous forests of India. The gum has a glassy fracture and occurs in rounded tears, which are normally less than 1 cm in diameter, but more often occurs in larger vermiform masses. The colour of the exudate varies from very light to dark brown. Gum ghatti is used as a substitute of gum arabic in pharmaceutical preparations for stabilization of suspensions. It is also used as an additive in the suspension polymerization of ethanoid polymers along with polyacrylamide.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (revised)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

GUM GHATTI — SPECIFICATION

(First Revision)

1 SCOPE

1.1 This standard prescribes the requirements and the methods of sampling and test for gum ghatti (Dhau or Dhawra) which is a dried gummy exudation obtained from *Anogeissus latifolia* wall family Combretaceae.

2 REFERENCES

2.1 The Indian Standards listed below are necessary adjuncts to this standard:

IS No.	Title
IS 1070 : 1977	Specification for water for laboratory general use (<i>second revision</i>)
IS 2631 : 1976	Specification for <i>iso</i> propyl alcohol (<i>first revision</i>)
IS 7437 : 1974	Methods of sampling and test for vegetable adhesives

3 GRADES

3.1 The material shall be classified into the following three grades, based on colour determined by visual examination:

Grade	Colour
1	Off-white to buff
2	Light amber to brown
3	Dark brown to near black

4 REQUIREMENTS

4.1 Description

The material shall be in the form of tears of variable size or in broken irregular pieces. It has a bland taste and practically no odour.

4.2 Solubility

4.2.1 Water

A minimum of 90 percent of the material shall be soluble in water and shall yield a colloidal solution of pH about 4.5.

4.2.2 Ethanol

A minimum of 90 percent, of the material shall be insoluble in ethanol.

4.3 Bark and Foreign Organic Matter

The material when tested according to the method prescribed in 23 of IS 7437 : 1974 shall contain not more than 1.3, 2.5 and 5.0 percent by mass (*on dry basis*) of bark and foreign organic matter for Grade 1, Grade 2 and Grade 3 respectively.

4.4 The material shall also comply with the requirements given in Table 1 when tested according to the methods indicated in col 6 of the Table.

Table 1 Requirements for Gum Ghatti

Sl No.	Characteristic	Requirement			Method of Test, Ref to Clause No. of IS : 7437 - 1974
		Grade 1	Grade 2	Grade 3	
(1)	(2)	(3)	(4)	(5)	(6)
i)	Volatile matter, percent by mass, <i>Max</i>	14	14	15	5
ii)	Total ash, percent by mass, <i>Max</i>	2.2	3.0	4.0	6
iii)	Acid-insoluble ash, percent by mass, <i>Max</i>	0.2	0.3	0.8	7
iv)	Viscosity of 5 percent solution in centipoises at 27°C, <i>Min</i>	1 000	900	800	Annex A

5 PACKING AND MARKING

5.1 Packing

The material shall be securely packed in moisture-proof bags or rigid containers, as agreed to between the purchaser and the supplier.

5.2 Marking

The packages and the drums or bags in which they are stored shall be marked with the following:

- a) Name and description of the material;
- b) Name of the manufacturer and/or the trade-mark, in any;
- c) Net mass, and gross mass;
- d) Batch number in code or otherwise to enable the batch of manufacture to be traced back from records; and
- e) Year of manufacture.

6 SAMPLING

6.1 Representative samples of the material shall be drawn and conformity of the material to the

requirement of this specification shall be determined according to the procedure prescribed in 4 of IS 7437 : 1974

6.2 Number of Tests

Tests for all the requirements given in 4 shall be conducted on the composite sample.

6.3 Criteria for Conformity

A lot shall be declared as conforming to this specification if the composite sample satisfies all the requirements given in 4.1, 4.2, 4.3 and 4.4.

7 TESTS

7.1 Tests shall be carried out according to the methods given in IS 7437 : 1974.

7.2 Quality of Reagents

Unless specified otherwise, pure chemicals and distilled water (see IS 1070 : 1977) shall be used in tests.

NOTE — 'Pure chemicals' shall mean chemicals that do not contain impurities which affect the results of analysis.

ANNEX A

(Foreword)

DETERMINATION OF VISCOSITY

A-0 PRINCIPLE

A-0.1 The resistance to movement of a spindle is measured and expressed in terms of viscosity in seconds. The resistance being directly linked with viscosity can be expressed directly in terms of viscosity by previous calibration of the instrument.

A-1 APPARATUS

A-1.1 Brookfield Viscometer Type RVT or Equivalent

A-1.2 Mechanical Stirrer

A-1.3 Constant Temperature Bath, maintained at $27 \pm 1^\circ\text{C}$.

A-2 PROCEDURE

A-2.1 Weigh accurately 5.00 g of the material in a 250-ml beaker. Fix a stirrer and thermometer in it. Add 10 ml of isopropyl alcohol (see IS 2631 : 1976) and mix it thoroughly so as to form a slurry. Add 80 ml of boiling water quickly while

stirring the solution rapidly. If there are any lumps in the solution, discard and prepare the fresh solution until a clear solution is obtained. Cool and stir the solution till the temperature drops to 80°C . Place the beaker on a water bath maintained at about 85°C and stir frequently for 10 minutes. Remove the beaker and place it in a water-bath maintained at $27 \pm 1^\circ\text{C}$. Stir the solution and add water so that the final weight of the beaker is 100 g more than the tare weight of the beaker. Adjust the temperature of the solution to $27 \pm 1^\circ\text{C}$ and measure its viscosity with Brookfield viscometer RVF model at 20 rev/min using spindle No. 4. Other viscometers may also be used provided they have been calibrated against Brookfield viscometer. Maintain the solution for 24 hours at $27 \pm 1^\circ\text{C}$ and again determine the viscosity at $27 \pm 1^\circ\text{C}$.

A-2.2 The limit prescribed in Table 1 shall be taken to have been satisfied if the viscosity of the solution both before and after 24 hours period is not less than the prescribed value.

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